2018 AIAA SPACE and Astronautics Forum and Exposition, 2018

Analysis of the topography and gravitational field of venus using space missions data and fractal geometry

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Abstract

© 2018, American Institute of Aeronautics and Astronautics Inc, AIAA. All rights reserved. The purpose of this paper is to present the results of structural analysis of gravitational and topographic parameters of Venus using the data from space missions, including “Magellan”. The model gravitational potentials are presented as analytical functions of coordinates. The model is constructed on the basis of variations of Venus’ artificial satellites orbits. As a result, fractal correlations of Venus’ geoid anomalies and gravitational potential in both longitude and latitude as well as the mean value of fractal dimensions are calculated. The mean fractal dimension of Venus topographic model in latitude is D = 1.061, in longitude is D = 1.037; the mean fractal dimension of Venus gravitational potential model in latitude is D = 0.96, in longitude is D = 1.053.

http://dx.doi.org/10.2514/6.2018-5243

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